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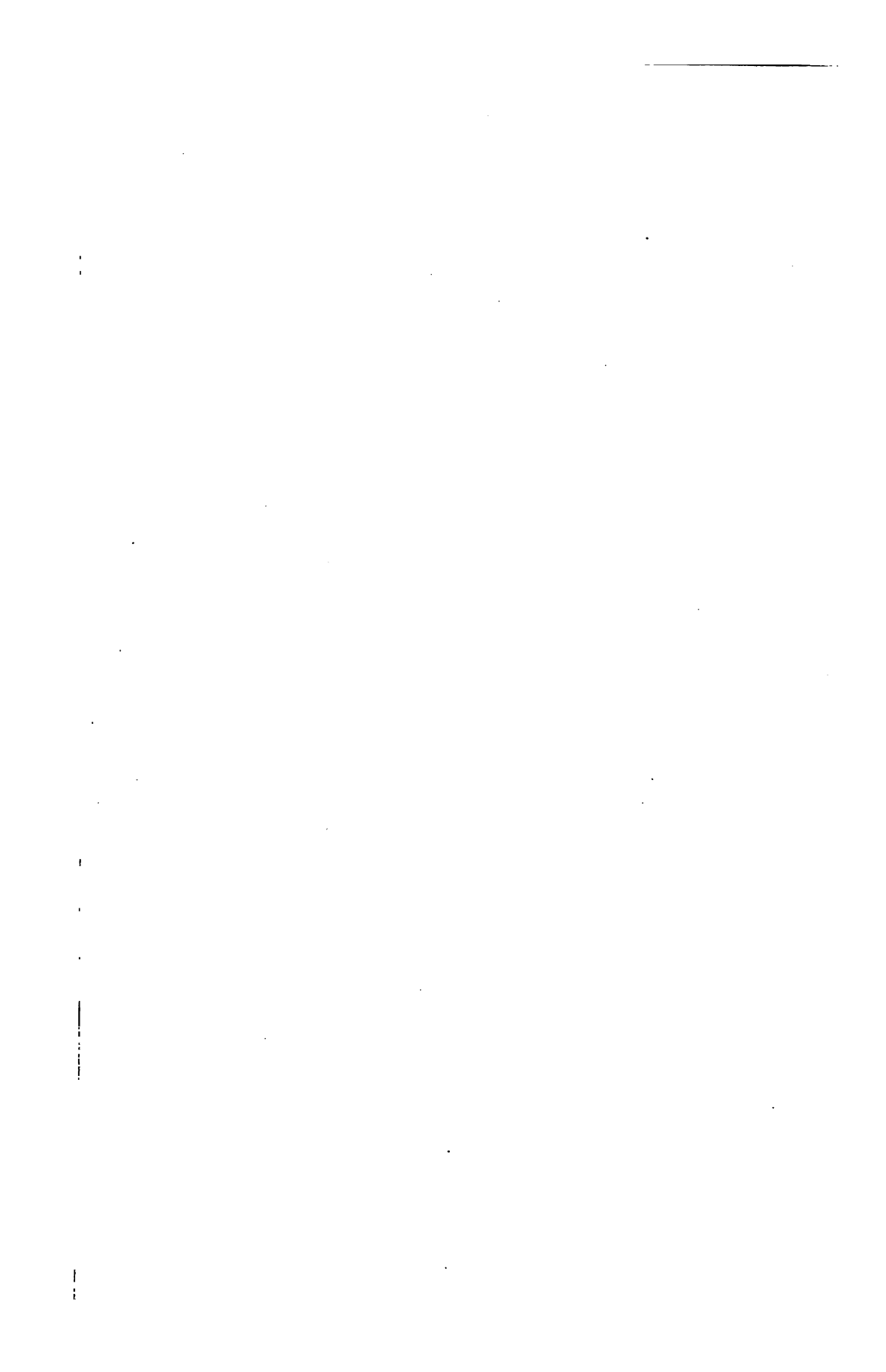
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ON

TECHNICAL EDUCATION

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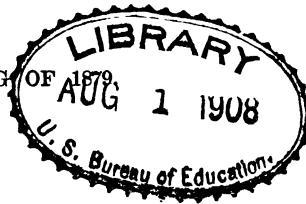
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PROFESSOR WALTER SMITH,

State Director of Art Education in Massachusetts.

DELIVERED BEFORE THE DEPARTMENT OF SUPERINTENDENCE OF THE
NATIONAL EDUCATION ASSOCIATION,

AT

THE MEETING



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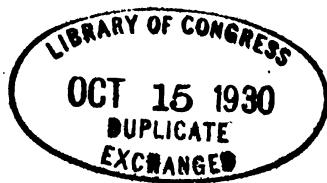
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TECHNICAL EDUCATION AND INDUSTRIAL DRAWING.

Prof. WALTER SMITH, State director of art education in Massachusetts, then read the following paper :

Mr. President, ladies, and gentlemen : The subject upon which I have to address you to-day is that of "Technical education and industrial drawing," a subject which is comprehensive enough to afford interest to the general public, while it is at present the best discussed theme among professional educators. I am aware that this whole matter is neither new nor strange in Washington, for from the Bureau of Education in this city has emanated much of the most valuable information we possess concerning it ; and the lecture, recently published, by General Birney, delivered by him before the Washington Art Club, upon a phase of the subject described as "Industrial and decorative art," is perhaps the fullest and fairest presentation of this matter that has appeared on this side of the Atlantic.

Though I hardly expect to present to you much that is new, I may possibly coöperate with you in the diffusion of some new light on an old subject ; hoping that thereby additional interest may be awakened, and that in consequence serious consideration may be given to this question, one which has assumed an importance that may be fairly described as national in its character. It may at first sight be considered an over-estimate of the matter if it should be asserted that upon the technical knowledge and skill possessed by a nation depend its safety, its wealth, and indirectly its happiness ; yet this is undoubtedly true.

It may also be stated that any scheme of education which does not from the first make provision for the gradual acquirement of such technical knowledge and skill, at such times and in such ways as the ages and circumstances of the pupils necessitate, is insufficient and not practical, and in dire need of complete reorganization. Yet that happens to be the case with every scheme of public education administered by city or State authorities in the United States of America to-day.

I could have made that statement in many more words, and so have beclouded its meaning that you would not be shocked by it ; or I might have quoted some one else who said it, and thus have shielded myself from the responsibility of saying it. But I prefer to say it thus briefly, in order that there may be no possible misunderstanding of it, and that those who may wish to attack the statement and its author may know the cause of war, the man to be assailed, and where to find him.

For the reason that our schemes of education have been found deficient and not practical, the whole subject of general education is now on its trial before the public ; and it requires no very deep study, nor wide re-

search among newspapers or periodicals, or in meetings such as this, to be convinced that this trial will be completed, and a verdict be rendered by the jury.

It is a common thing to hear sensible men say, as it is also frequently said in newspapers, that for the duties of real life the children in the public schools are not so well prepared now as they were twenty years ago, or even fifty years ago, though they know more and it costs more to teach them; while the silver tongued orator of Massachusetts has stated that under the old district school system, when a boy spent a few weeks in the school in winter and worked the rest of the year on the farm, he got a better, because a more practical, education than he can get in the country to-day.

The trouble about such remarks as these is that they are true; and that it is possible for them to be true reflects great glory on the advancement of this country in civilization, and much discredit upon public educators and public education, thus lagging behind the progress and failing to supply the educational needs of the country.

For the true interpretation of such statements is that during fifty or twenty years past the country has advanced faster than its school room education, and, instead of requiring for its citizens now the standard of education which was sufficient then, it needs something more in harmony with the educational standard of older countries, and that is something it does not now possess. That the farmer's boy should be fitted by a few months of book learning and many months of technical training to become a good farmer is the best possible argument for technical education of another kind, to fit a vast majority of the people for practical life who will never become farmers; for, as the school-room instruction represented the boy's *general* education and the farm labor his *technical* education, it will be noted that he was preparing for practical life in one vocation from the time his education commenced.

But it has pleased the Supreme Power that in the development and consolidation of this country we should not all become or remain farmers. The products of the soil are the raw materials of the industrial arts, and it takes more people to convert those raw materials into useful objects for a civilized community than it does to produce the original materials from which the objects are made. We are changing our occupations from being largely agricultural to manufacturing, and have thus outgrown the educational facilities which may have been ample for the youth of this nation in the days that are past.

It is from this cause that we are justified in describing our present education as deficient, inasmuch as it makes no ample provision for the technical knowledge and skill required by the people engaged in trades and manufactures. The literary part of our education, which fits for mercantile life and the professions, has not retrograded, but advanced, until it monopolizes nearly all the precious time of youth; while the needs of those destined for the trades and manufactures are ignored in our schemes of education, left high and dry without aid or comfort,

until the name of the native-born American mechanic is a synonyme for want of skill and his work for something that will not last.

There are exceptions to this rule, as to every rule, as in our mechanical and labor saving machines; but where it is not true we shall find that men have become tasteful or skilful in spite of their lack of opportunities, and not by means of the opportunities which their education should have given them.

The gradual decay and final extinction of apprenticeship to trades in this country have the credit of being responsible for much of the lack of skill among workmen, but it does not account for their want of taste. As a substitute for apprenticeship it has been proposed to establish trade schools, in which the projectors assert that by constant practice under an instructor for two years a youth will become a better workman than by an apprenticeship in the regular way for seven years. I can hardly believe that to be true, for there is something which comes from the experience of making objects in a workshop carried on in the regular way of trade that no hot-house culture in schools alone can give. Yet I should like to see the experiment tried, whether instruction, carried on for a few months only, can be made a substitute for apprenticeships which prepare people for the work of a lifetime.

It seems to me that the true remedy is to introduce the elements of industrial knowledge and skill into the public schools in such a manner that it will assist and not obstruct general education; and then, when the boy leaves the grammar school to begin his wage-earning life, we should provide technical schools of art and science, where, during his evenings, he can learn the theory and thereby improve in the practice of his daily work. This is the only way the mechanic or artisan can be reached, and it is the way he is now being reached in all the skilled countries of Europe. He has to support himself during the interval between 12 or 14 years old and 20 years old, and if we offer technical education to him in day schools only, in that period when he must be at work and cannot therefore avail himself of it, we offer it only to the children of the wealthy in the name of the mechanic. There are agencies enough already for the education of professional men, and their future employment will pay for any investment which their parents may make in their education.

What is now wanted is that the needs of the mass of the people should be considered, and that the most neglected of all, the mechanics, should have a fair chance given to them out of the public funds, of which they are the principal producers.

That a great reform in this direction is necessary seems to be the opinion of all educators whose experience and observation have been extended beyond the immediate surroundings of home. How to make this necessity evident to the public, and bring it about without injury to that which is good in present schemes, is the problem of our day. This is preëminently a period in which to take a broad survey of the educational

field, especially from the economic aspect, and incidentally, also, from the standpoint of progress.

The times are hard ; commercial and financial distress presses heavily in every direction, and the necessity for economy holds in its relentless grasp every item of public expenditure, which it is subjecting to the most rigid scrutiny. All this is auspicious. Economy is the parent of honesty, and it is the best possible good fortune that the system of public education of this country is receiving a thorough economical purging.

It is not from any *lack* of education that complaints are being made, and the question therefore arises, whether the education is of the right sort, and whether the people who most need it obtain what they want. And true economy, which is always far seeing, cannot afford to be niggardly. The farmer does not regard the outlay on his seed corn as an extravagant expenditure so much as a necessary investment ; for he remembers that "there is that scattereth and yet increaseth, and there is that withholdeth more than is meet, and yet it tendeth to poverty."

Let us see to what extent this educational scattering is carried, on and what comes of it.

In the Eastern, Middle, and Western States there was expended last year the sum of about \$70,000,000 for public education. What was this vast sum expended for, what were the results aimed at, and what did the public get for its money ?

These are practical, common sense questions, and their consideration is pertinent in a meeting like this. Nor can we blink the issues they involve ; for, in face of such an expenditure, the people who are toiling with their heads or their hands, and who in these distressed times are straining their utmost to make both ends meet, surely have a right, in face of such heavy taxation, to ask what it is all for, and to see if they are really getting their money's worth.

Every educator should welcome these inquiries. Certainly it behooves every one who is engaged in directing the features and in administering the provisions for maintaining public education carefully to study the subject in the light of present experience. From such a study he will be able to answer these inquiries intelligently, and also be able, during this period of depression, while the economical knife is being laid so closely to public expenditure, to direct public opinion so that no harm shall come to necessary and fundamental features of public education.

I am free to state that there has been a great deal of sentimentalism about this subject. Because it is, perhaps, the most important and indefinite single subject with which a community or a state has to deal, it not unfrequently happens that it gets straddled by theoretical hobby riders, who make of conventions such as this the Epsoms or Jerome Parks wherein pet theories are made to show their paces.

Being a specialist myself, I know that I run the risk of being considered one of these self same hobby riders ; but I repel the insinuation, for my interest in the whole subject of national education is infinitely greater than my anxiety for any detail in it.

It is true that I am engaged, professionally, in promoting one particular branch of education. At the same time, I wish to make the fact clear that in urging the importance of technical education and industrial drawing I place its consideration not alone on the grounds of its special or exceptional character, but rather on the basis of its great and economical value in general education and in practical life.

As the subject of education has been so much discussed of late, and as there is such a contrariety of opinion offered concerning what its features and aims should be, it may be wise to take a few soundings, in order to see where we are.

For the purpose, then, of getting at a few points of general agreement, let me ask, What is understood by education, and particularly by public education? I think the answer that would come to such a question, especially from the States to which I have referred, which have taxed themselves \$70,000,000 for its support the last year, would be, that *education is the fitting of youth for the occupations of adult life and the duties of good citizenship*; and it seems to me that we should have in such an answer one that practically covers the whole question; and yet, simple as this answer is, self evident, indeed, as it appears, I observe in the discussion now going forward that it is extremely difficult for educators to defend the present system of education, particularly against the charge of its want of practical character, in any way that commends itself to the common mind by its explicitness and clearness.

I am aware that very many eloquent and scholarly essays have been written in behalf of the present system; but the discussion has been beclouded by the use of many phrases not understood by the public, such as "the developing of the mental and moral faculties of youth," "the broadening of their intellectual powers," and others of that sort; while the virtues of "disciplinary studies" and "culture studies" are also enlarged upon. By such treatment, the direct and simple object of education has become enveloped in an æsthetic mist of fine phrases to such an extent that it appears to plain and honest minded folks as decidedly too much set up in character and as hardly belonging to the toiling masses. Consequently, it is being vigorously attacked for its apparent want of practicality on the one hand and its undue expensiveness on the other.

As an educator and as an advocate of the broadest possible education for all classes, I am glad to see these attacks made. Every true educator should welcome them. We cannot have too much discussion, and one of the effects of this present widespread interest, I have no doubt, will be the explosion of many educational theories which are now so boldly advanced, the abandonment of the present narrow and over literary schemes, and the establishment, on a firm basis, of a system of education which shall meet the needs of the workingman and the mechanic, the producers of industrial wealth, and which shall prepare others to appreciate the skilled products of the country.

When the people see clearly and understand intelligently the close

relationship of the practical education offered them to success in all conditions of life, they will not suffer it to be hampered or curtailed for want of sufficient support.

It is, perhaps, the first duty of educators to make clear the practical features of the educational ideas they advance. Holding this opinion, I beg to submit to your consideration some general points in regard to the scope and character of public education which I regard as fundamental.

I assume it agreed that public education in this country must tend toward a preparation for the occupations of adult life and the performance of the duties of good citizenship. This being granted, our first step is to see what the general occupations of adult life are, for which education can be an elementary preparation, and, second, what are the duties of good citizenship which elementary education can promote.

In the first place, then, let us take a broad view of what the general occupations of adult life are:

First. We have those who are engaged in producing food and raw materials of industrial arts, animal, vegetable, and mineral. These are the producers of natural wealth.

Secondly. We have those who are engaged in using the raw materials produced by the first class, as a basis on which to expend their skill and taste in the manufacture of objects for the comfort and pleasure of mankind. These are the producers of industrial wealth.

Thirdly. We have those who are engaged in trade, finance, and transportation. These are the distributors of the wealth produced by the first two classes, but are not themselves the producers of wealth.

Fourthly. We have those engaged in military, naval, and political service. These are persons employed for the protection of social and political order.

Fifthly. We have those engaged in the professional occupations, such as lawyers, clergymen, physicians, and teachers. These are employed in ministering to the legal, religious, physical, and educational wants of all classes.

Sixthly. We have those engaged in personal or domestic service.

You will observe that it is the persons engaged in the first two classes of occupation that are the real producers of wealth, while the others are maintained by occupations growing out of its distribution or by professional or political occupations growing out of the necessity for protection to the whole social and political organism.

In the educational discussions of the day we do not see sufficiently realized the changes in the relative numbers of persons in these six classes that have been made in recent years; nor are educators sufficiently alive to the necessary changes in the scope of public education thereby entailed.

What, then, are these changes? If we examine this classification

closely, we shall find that these changes have their origin in and are principally based upon the transformation that has taken place, within the last few years, in the second group of occupations, those of the industrial classes. These changes have been enormous; I might say sufficiently so as to completely revolutionize the old relation of these classes to one another. A slight examination of the material and political condition of any one of the leading States to-day shows that its material and political power is centring about its industrial classes, and that, as these flourish or decline, so all the other interests of the State flourish or decline. Indeed, it is a well established economic truth that industrial wealth, in other words a healthy condition of the industrial occupations, is absolutely necessary to the success of all other occupations.

So clearly is this fact recognized by the five great European nations, England, France, Germany, Austria, and Italy, that to-day they are in earnest competition with one another to develop to the utmost the industrial productiveness of their people.

Let me for a moment digress to make a statement in regard to what industrial development consists of. In a manufactured product we have two elements, the raw material and the skilled labor which has been put upon it. Take, for instance, this piece of steel. Its value is, perhaps, three cents. As yet skilled labor has hardly touched it. Fabricated into this form, we have a surgical instrument which is worth ten dollars. Now, what makes the difference in price between these two pieces of steel? The simple fact that skilled labor has been applied to this one and not to the other; and it is the skilled labor, therefore, which gives it its chief value. Take this piece of cotton cloth for another illustration. You have here eight cents' worth of raw material in cotton. This material has been fabricated by many processes, until there has been produced this piece of cloth, worth one dollar and a half.

Thus, again, we see that the principal element in the value of an article may be the skill and taste which have been expended upon an insignificant bit of raw material.

Then, it may be said that the ratio of increase in value made by skilled labor upon the raw material will be determined by the amount of skill and quality of the taste displayed.

This is precisely where a consideration of the industrial element in education becomes important. When we see what creates value in labor, and how little we have hitherto done by education to foster this element, it is time to overhaul the whole subject, using both spade and pruning hook in the operation.

To understand the full bearing and significance of this matter of technical education in art and science, we must consider its influence on human labor and industry; for be it remembered that this whole question is an economical one, not one of sentiment; it has as much to do with practical life and profitable labor as the employment of the locomotive in lieu of horses or the use of gas instead of farthing rushlights.

Let us for a moment, then, look at what constitutes the element of value in human labor.

Labor is the application of two powers: first, skill; second, force. The product is valuable in the proportion as it displays skill and without value in the ratio of its absence of skill. This is as true about the making of a watch, or a nail, or a pair of boots as about the performance of a difficult surgical operation. The skilled workman is the one who produces something of greater value out of the same material than the unskilled workman can, and with less waste of time and material. He is, therefore, a more profitable agent to employ than the unskilled, and his work being more valuable he receives a higher compensation for it, while his employer, finding a ready market, at high prices, for industrial masterpieces, makes more profit on the sale of them than on unskilled productions. The purchaser is better satisfied with the article and willing to pay a higher price for it than for one displaying no skill. So that the application of skill and taste in the production of an object gives (1) to the workman higher wages, (2) to the employer larger profits, and (3) to the purchaser more satisfaction than if the skill and taste had been absent. This is the prosaic and practical aspect of the question, its economical character.

There is another view I shall refer to, though not to enlarge upon. That may, if you please, be called the sentimental aspect, in contradistinction to the practical one. It is this: That the workman whose taste and skill are employed is a happier man than if only his muscles are used in his work. His soul and spirit are engaged; the immortal part of him is influencing his labor, breathing into the work of his hands the very breath of the life that shall never die. Such a man was Raffaele when painting the Sistine Madonna, transferring the image of his own beautiful soul to the canvas; an act of homage and praise to his Maker for life and happiness and a gift to all posterity of a "joy forever."

To the practical people who do not believe in sentiment, I would also like to remark that the Sistine Madonna is *worth a good deal of money*.

What is true about the productions of one workman applies to all who are engaged in the industrial arts, and it is, therefore, equally true about a whole nation. The blacksmith and the maker of watch springs may work in the same material, steel; yet one may produce an object of small value out of a pound of the material, while the other produces many of great value out of a pennyweight of it. So it is with almost all the raw material of the arts, both fine and industrial. A piece of clay which is of less value than any coin in circulation becomes under the touch of Michael Angelo of greater pecuniary value than any coin that was ever circulated; a lump of common earth, that might have been made into a firebrick worth a penny, has been transformed by the great sculptor into a relic that its weight in gold could not purchase.

Though the difference in relative values between skilled and unskilled

work is not so great in industrial art as it is in fine art, yet there is a difference, and it is invariably recognized and paid for.

It is hardly worth while to continue this argument, because no one can challenge it, and one illustration that is typical of thousands is enough. We *must* recognize its truth, and the value of its significance to us is determined by the proportion in numbers of our people employed in the manufacturing industries, and the amount of capital invested in them.

If we were a purely agricultural people, the loss we suffer from want of industrial skill would not be so great as to be formidable, nor would the danger to our commercial prosperity be so imminent as it is. But we are a manufacturing people, with very heavy interests involved in this question, and these interests can only be preserved and developed by investing them with taste and skill. In other respects our people are highly educated and have refined taste, and will not be satisfied with clumsy and tasteless objects, whether of native or foreign manufacture.

We have common sense and refinement enough to want things to look well and wear well, and unless native manufactures can be so made we do not buy them; hence the enormous importations of foreign goods which do satisfy our love of honesty and beauty by their skill and taste. You have only to go into the stores of any large city and inquire where the finest goods come from to find out why a good many native workmen are out of employment.

If the present condition of labor is thriftless and unprofitable, what should be done to insure its improvement? We know what other nations have done when suffering from the same cause. The first thing England did was to establish schools of art in the centres of manufactures; but that did little good, for their influence was too limited to improve public taste. The next experiment was to teach drawing in the public schools and train highly skilled teachers of art, and therein was found the true remedy. The public was taught at the right age for learning, in childhood, and the pupils of the public schools, whose taste had been encouraged by regular exercises in drawing, crowded the schools of art in the evenings as soon as their apprenticeships to trades began and practical life commenced. In 1851 there were nineteen schools of art in the United Kingdom; this year there are nearly one thousand schools of art and art classes, and of a much higher standard of success than in 1851, and industrial drawing is now taught in the national schools.

What has been done for art by the government and the people is insignificant compared with what has been accomplished in scientific instruction during the last twenty years. The regular teachers of the day schools have qualified themselves to give instruction in art and science, and the national school buildings are used for classes. In consequence there are many thousands of science classes spread like a network all

over the country, discovering, developing, and economizing all the native talent of the people.

The French are devoting more and more attention to technical education in the public schools, and last year, while I was in Paris, the legislature passed an ordinance appointing seventeen inspectors of drawing for the public schools of the republic. This was entirely a new measure; but it shows how keenly alive the French are concerning the sources of their national prosperity, and how little they feel that they can afford to rest on their laurels.

To return from this rather long digression.

I could bring before you hundreds of articles exhibiting but trifling values of raw materials, such as iron, wood, clay, glass, and textile fabrics, in contrast with great values from skilled labor put upon them; but I think we shall all agree that the value of manufactured goods depends principally upon the quality and amount of the labor they contain.

Now, if we consider for a moment that the number of raw materials and metals for all the industrial occupations is comparatively few and that the cheapness of transportation makes their distribution among nations common, it is evident that the nation which has the most skill and best taste to put upon these raw materials—that is, the one that can fabricate them into the greatest variety of objects, and make them minister to taste as well as to convenience and comfort—holds a decided advantage in all the markets of the world.

I do not wish to weary you with statistics on this point. Let me say, however, that last year England exported manufactured goods of the value of about \$750,000,000. If we take a safe estimate and say that one-half of this amount represented the product of skilled labor, you see at once what an enormous exporter she is of the labor of her people. If you examine the trade of France, you find that she greatly exceeds England as a seller of skilled labor. No one could examine the recent International Exposition at Paris without being struck with amazement at the great wealth these two nations are producing and accumulating by virtue of the skill and taste they are promoting among their peoples.

I think it will be evident without argument that the great development which has taken place in these industrial occupations must affect all the classes who are non-productive, and, therefore, all society.

Seeing, therefore, that it is the development principally in the industrial occupations which constitutes the principal changes now going on in human employments, let me turn from this general view of the subject and ask your attention to a particular exhibit which practically and very completely illustrates the relation of these various classes of labor to each other and their relative importance when considered in the light of education.

I invite your attention to the material and political condition of the people in the State of Massachusetts.

In this State a very thorough attempt has been made to get accurate statistics bearing upon the social and material condition of the people, and the work has been so well done by the chief of the bureau of statistics, Col. Carroll D. Wright, that it is believed to stand unequalled by any similar statistical inquiry.

As these results are important and I shall have occasion to refer to them, I have had them placed conspicuously on this chart, that you may the more readily grasp their import.

Observe that in the State of Massachusetts we have a population of about 1,600,000.

Our first inquiry was, How do these people get their living? What are their occupations?

In this population we have—

Employed in government and professions.....	29, 730
Employed in trade and transportation.....	104, 935
Employed in domestic and personal service.....	424, 289
Employed in manufacturing and mechanical industries.....	316, 459
Employed in agriculture	70, 945
Employed in fisheries.....	6, 656
Employed as laborers (unskilled and unclassified)	52, 179
Engaged in no occupation (about).....	300, 000

Add to these numbers about 300,000 for the youth of the State, and we have a general picture of how this community is employed and the number of children in the course of preparation for the various occupations of the State.

Let us examine this exhibit closely, to see which occupations form the real basis of the State's prosperity.

Shall we find this basis in the first division, in the professional employments? Certainly not. These are not employments which add directly to the productivity of the State. Indeed, these occupations could not exist were it not for other employments beneath them.

Shall we find this basis in the second, among those engaged in trade and transportation? Here again we have secondary employments, mere distributors of wealth, not producers of it. These occupations all presuppose the existence of others around them.

Shall we find this basis in agriculture? Note the small number engaged in this occupation, and as we all know that Massachusetts is not an agricultural State, what she raises in the way of agricultural products must be of an exceptional character, or must owe its existence to exceptional markets created near by. Agriculture, therefore, is wholly dependent upon the existence of other contiguous occupations.

Shall we find this basis of prosperity in this other class of occupations, her servants, embracing over 424,000 of her population? Certainly not; for these persons are in no sense producers. They are those

who, unfitted for other occupations, drop to the lowest level of personal service.

Where, then, do we find the basis of the prosperity of Massachusetts? Here, with these 316,000 workers in her industrial workshops. They form the principal producers of the wealth of the State.

We have just seen that in industrial manufactures there are two elements, raw material and skilled labor. As Massachusetts produces no raw material—save her east wind, which has never yet been utilized in industrial fabrications—it is evident that even her right to an industrial existence rests simply and solely upon her possessing the other element, skilled labor.

This exhibit of occupations, therefore, shows us conclusively that Massachusetts is an industrial State solely by virtue of having 316,000 persons possessing certain degrees of skill and taste.

If we were to turn to the capital employed, we should find the productive capital principally invested in two ways, in manufacture and in agriculture. An examination would show us that the capital invested in the latter is largely dependent upon the existence of the former for its returns.

The figures concerning invested capital are as follows:

	Capital employed.	Annual product.
Capital in industry	\$283, 000, 000	\$593, 000, 000
Capital in agriculture	210, 000, 000	41, 000, 000

To sum up the whole situation in a word, Massachusetts exists to-day as a State by virtue of her manufacturing or industrial interests. As these interests prosper, other interests in the State prosper; as these decline, all other interests in the State decline; so that you have a community based, so far as its material condition and prosperity are concerned, upon its industrial employments, and able to contribute to these employments but the one single element of skilled labor.

As we are considering this matter in its relation to practical life, and as the statistics clearly show that Massachusetts holds her position among her sister States by virtue of the labor of 316,000 of her mechanics and artisans, it will be easy to see the important bearing of the public education of the State on their occupations.

Be it remembered that it is the work of the hands and brains of these men that holds the other interests of the State together. It is the skill and taste they can infuse into their work, the change they can create in the raw material that capital can bring them, that constitutes the real profit to the capital of the State.

Recognizing this through the urgent representation to the legislature of some of her most intelligent manufacturers, the State passed a law in the year 1870 that drawing, allowed by all to be the common basis of all industrial education, should be taught to all children in the public schools; also, that all cities and towns having more than ten thousand inhabitants should provide classes for free instruction in industrial draw-

ing, either in day or evening schools, under the direction of the school committees.

Here is the act :

[Chapter 248, acts of 1870.]

SECTION 1. The first section of chapter 38 of the general statutes is hereby amended so as to include drawing among the branches of learning which are by said section required to be taught in the public schools.

SEC. 2. Any city or town may, and every city and town having more than ten thousand inhabitants shall, annually make provision for giving free instruction in industrial or mechanical drawing to persons over fifteen years of age, either in day or evening schools, under the direction of the school committee.

SEC. 3. This act shall take effect on its passage.

This act took effect on May 16, 1870. It empowered any town, whatever might be the extent of its population, to establish such evening classes for industrial drawing, and required twenty-three to do so.

Though many difficulties were encountered in carrying out the law, there was an evident desire to obey it, and the difficulty of finding teachers was met by the State in the establishment, in 1873, of a normal art school for the education of teachers of industrial art. In all this action there seems to me to have been the greatest economical sagacity. It imposed on the community the task of having drawing taught, and when the cry came that there were no teachers of the subject, it provided the teachers. And the State of Massachusetts, though it may not be doing in all of its parts what the larger cities in it are doing, will be led in the future, as in the past, by the action of its great centres of population.

The school committee of the city of Boston may be said to have taken a national lead in this matter, one that has been watched and commented on by European nations with much interest. Thus, the French commission on the educational system of the United States as shown at the Philadelphia Exhibition of 1876, reports as follows:

Scarcely six years ago Massachusetts introduced regular instruction in drawing, and the Northern and Western States are rapidly following her lead. If the last Paris Exposition revealed great advances in English industry due to the art movement developed since 1851 by the South Kensington School, what may we not expect from American activity, stimulated by the Philadelphia Exhibition? Everywhere, already, educators are pointing out defects, stimulating emulation, and they find an echo in the teachers of schools, as well as in the employers of labor. France must defend that preëminence in art which has heretofore been unquestioned. She has enormous resources which ought to be developed by well planned primary instruction. With us, as elsewhere, it is not enough to have excellent special teachers of drawing; it is not enough to have good courses and good special schools; but *all teachers, male and female, must be able to give the first instruction in drawing in daily classes to all their scholars.*¹ France, which has gone to work energetically after her misfortunes, ought to devote herself to the study of drawing, with no less ardor, and reinvigorate her productive powers at the very sources of art.

I might here say that, in the words italicized, France is advised to do what Massachusetts has been doing for some years, and this testimony from such a source ought to satisfy the theoretical educators who fancy

¹ The italics in this passage are mine.—Walter Smith.

that drawing is a merely "ornamental" study. To "*reinvigorate the productive powers of a nation at the very sources of art,*" by the teaching of drawing, is not a merely ornamental process, but a highly economical one. The report goes on to say:

The South Kensington system, so successfully and skilfully imported into America by Walter Smith, is likely to render as great service to that country as it has already rendered to England herself.

The report objects to our use of the lead pencil in drawing, and recommends practice with the soft crayon point. But, as a matter of fact, we use both hard and soft points to draw with, and so are more catholic in this matter than either the French or the English.

But its conclusion is very significant. It says, if certain suggestions concerning the processes of drawing were adopted, then "Massachusetts would leap at a single bound to a superiority in art instruction in primary education to which the old nations of the European world have hitherto been unable to attain. But, just as they are, the examples of the primary and grammar school work shown at Philadelphia are very satisfactory. When one considers that it represents the fruit of only two years of trial, *it must be admitted that such remarkable results have never before been secured in so short a time.*"¹

The works upon which this criticism was made were produced in the public schools of Boston and Massachusetts.

It is refreshing, also, to see that the Boston school committee has not lost its interest in this great question. In its last report, just issued—occurs the following trenchant and incisive statement:

The question of teaching trades in our schools is one of vital importance. If New England would maintain her place as the great industrial centre of the country, she must become to the United States what France is to the rest of Europe: *the first in taste, the first in design, the first in skilled workmanship.* She must accustom her children from early youth to the use of tools, and give them a thorough training in the mechanic arts.

That, in my humble opinion, is the most important utterance yet made in this country on the subject of technical education. And if every school committee in the United States would adopt the sentiment and act upon its conclusions, the one great obstacle to the industrial development of the country would soon be removed.

Thus far we have been considering education in Massachusetts as bearing upon the occupations of adult life in a most important section of the community.

We admitted in the preliminary argument that public education should also tend to good citizenship, and it will be well to inquire what would be practical education for good citizenship in Massachusetts. Good citizenship includes an intelligent use of the franchise and a ready compliance with the laws promoting social and political order.

Looking again at this classification of occupations in this Massachusetts community of 1,600,000 persons, it will be found that in this body

¹ The italics in this passage are mine.—Walter Smith.

of 316,000 workmen lies the chief danger to social and political order, if danger shall arise.

It is not among those who are employed in trade, agriculture, or the professions, or among the servants of the households, that the State needs to apprehend danger. They are all the servants of the mechanic, by whatever name known, and fear no competition, for they never encounter any, so long as their providers, the mechanics, are in full work and can employ them. But discontent and hatred of capital are apt to lurk among those who have to do skilled work without possessing much skill, and have to compete with the highly trained artisans of Europe without ever having had the opportunity of being qualified for the competition.

A man who cannot earn or command of capital more than a dollar a day, has a much stronger hatred of capital than one who can earn three dollars; and one has but to study the labor question conscientiously to see that the more you increase a man's wage-earning power, by virtue of superior skill and taste, the more you increase his respect for social and political order, and the larger is his stake in the continuance thereof.

So we see that the material, social, and political interests of Massachusetts are centered about her industrial population, and practical education in the State, whether regarded from its bearing upon adult occupation or upon good citizenship, should consist in giving the 300,000 youth of the State an education which should have a strong wage-earning power in industrial occupations. Her commercial, professional, and agricultural occupations have long been provided for in this respect; but until quite recently no particular efforts have been made for the education of her mechanics and artisans in the elements of knowledge which bear directly upon their wage-earning power in adult life.

There are doubtless many among her public men who believe that all industrial education is special in its character and should be given in special schools only, after general education has been completed and the workman has commenced practical life. This is a view which has been held and abandoned by the most skilled nations in Europe, which have learned to see by actual experiment the value of teaching the elements of art and science to all their people, from the first day of school life to the last, in the public schools.

There are others among her public men who are awakening to the fact that the future prosperity of the State depends in no small degree upon the skill and the taste which the next generation of artisans can be made to possess.

This is not an occasion, and the time is insufficient, to dwell upon all the educational, material, and political considerations that are presented in this exhibit. I will only add that no one can study the results displayed in Colonel Wright's admirable report without seeing most conclusively that it is the kind of education given in the public schools of

the State for the next few years that will determine largely her future material, political, and social condition.

I have dwelt upon this practical exhibit in Massachusetts because it seems to me a very instructive one for an educator to study. It gives some excellent material with which to cope with theoretical, sentimental educators on the one hand and narrow minded or ignorant taxpayers on the other.

To the educational essayist, who can see in education only a process of intellectual training, and who loves to dwell on the humanities and all the various aspects of æsthetic culture, and who decries all education that has not for its object the broadening of the intellectual powers of pupils or disciplining their minds, whatever these terms may mean, these statistics speak a practical admonition indeed. They show that an education directed solely for such purposes would be immediately practical to but comparatively few people in the State, while it would be incomplete as a fundamental wage-earning education for the real productive workmen who form so large a part of the adult population.

To the taxpayer, groaning under the expense of the present educational arrangements and blindly advocating a return to the three R's, this exhibit is equally instructive, for it shows him that education to be practical, that is, wage-earning, must be largely industrial; in other words, it must contain certain features for which that which we may call a three-R's power education does not provide at all.

What is true of Massachusetts is true to a greater or less extent of the Eastern, Middle, and of many Western States, and will become more true of every State day by day and year by year. Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania are following in precisely the same line of development as Massachusetts, and already their industrial interests are increasing beyond all others; while in Ohio so careful and observant a statesman as General Garfield has pointed out that the State has passed the period of her agricultural development, and her increase in wealth and population is now to be found in her industrial counties.

In this connection I cannot refrain from calling attention to the earnest words of Governor McClellan, of New Jersey, in his recent message, in which he emphasizes the importance of making the public education of the State more industrial in character, to meet the developing wants of the people. Among other things, he says:

It is now universally recognized that industrial drawing, *i. e.*, drawing as applied to the arts and trades, not landscape drawing, is the basis which underlies the vast majority of the pursuits of our people, and that it can be profitably made a part of the course in our public schools. * * * We need technical schools in various parts of the State. For instance, in South Jersey one is required in the interests of the glass-makers of that region; in Paterson they are needed in the interests of the silk and cotton factories and the great machine shops of the city. In Trenton a school is needed immediately for the benefit of the potteries, where boys and girls may be taught modelling, designing, and decorating, as well as the making of pottery itself;

for the potteries of Trenton have now reached a point where they daily suffer from the lack of a sufficient number of skilled employés, and if properly encouraged they will soon develop into one of the largest and most important interests of the country.

I might here suggest to Governor McClellan that, if Trenton cannot find a Flaxman to transform her clay into gold, she can at any rate do what Lambeth has done, establish a school of art under trained masters, and thus educate the workers employed in her potteries; and the State of New Jersey can make this an equal success by requiring drawing to be taught in her public schools to every child, as Massachusetts has done; thus offering an outlet for the talent of every child, creating a market for her manufactures, and making of Trenton the Lambeth and Etruria of the United States.

By availing themselves of the pioneer action of Massachusetts in creating teachers of industrial art, just as Massachusetts availed herself of the same action taken by England, every State in this Union may, any day it chooses, add the elements of industrial education to the instruction given in her public schools.

The United States has not far to seek for a market for her skilled industries when she possesses them. She is her own market, and one that England and France find very profitable. She has only, therefore, to reach forth her *hand* and take it; but it must be done by her hand, and not by her head alone.

It was said of old that—

Nuremberg's hand
Goes through every land.

The time may come, though it can come only in the way I have suggested, when the skilled hand of America may go through every land; and that will be a vast improvement upon keeping our unskilled hands in our own pockets, going through our own purses to pay for our want of skill.

I am well aware that, in claiming that public education should be based more than hitherto upon an industrial wage-earning power for the masses, I lay myself open to the criticism of those who hold to certain disciplinary and culture views as main considerations in education. They must, however, admit that at present people are dissatisfied with the education given in the public schools. This is a fact which cannot be ignored; and, if we probe the discontent to the bottom, we shall find it resting on the conviction that the education of to-day does not sufficiently provide for the adult life of all classes; and in pleading for more attention to industrial skill and taste I have only indicated a practical remedy which has been found successful elsewhere. If the advocates of *culture above skill* have any more likely remedy to propose, the public will be glad to hear it. I yield to no one in advocacy of the broadest possible æsthetic training in public schools, but I hold it to be our first duty to try to fit our youth to maintain themselves when they arrive

at adult age, if need be, by the work of their hands, so as to be prepared for the competition which is pressing harder every day, and thus protect themselves from being superseded by machinery, which is gradually monopolizing all the labor that requires no skill. In face of such developments, the mere ability to read, write, and cipher, and the possession of a thin film of culture education, are no protection to mechanics and are not wage-earning to them in the sense in which these acquirements may be to others. I do not wish to be misunderstood on this point. I believe in the fullest development possible for public education; but I hold that we cannot as sensible men claim the right to-day to put the needs of the mercantile and professional classes before and to the exclusion of the industrial classes.

The interest in industrial education now rising will not die out. It will soon make itself felt in no light manner, and this annual disbursement of \$70,000,000 in the Northern States will not be begrudged when the industrial classes see that their needs are recognized as well as those of the mercantile and professional classes.

All that the creators of industrial wealth need and have a right to ask for is as good a preparation for their practical life in the public schools at present existing or to be established as all other classes are getting. To them, culture means a knowledge of living arts, while to others it may mean a knowledge of dead languages; and there is certainly as good a reason for the existence of the first sort of culture as for the second.

As we turn from the contemplation of particular States and survey the conditions surrounding and permeating this broad American life with all its possibilities, we have to note that much of our future weal or woe centres about the profitable employment of the industrial classes. Already they hold no small share of political power, and it is in the nature of things that their numbers should greatly increase. At present they are suffering from broad competition on the one hand and labor saving machinery on the other, and between this upper and nether millstone they are apt in their discontent to look upon capital and upon government as their oppressors.

These are facts which educators, economists, and statesmen cannot afford to ignore. The country is getting older; it is rapidly developing the wants and the tastes of older civilizations; and now, having provided for the education of the laborer, the shopkeeper, the merchant, and the professional man, it is time for us to recognize that the day of the mechanic has come at last, and come to stop.

Having dwelt, more fully than perhaps I ought to have done on the general aspect of this question, I wish, in the few moments left to me, to make some suggestions on the second part of my subject: industrial drawing.

The term *industrial drawing* is used to distinguish it from all fanciful or ornamental education coming under the name of drawing.

It has been introduced into the schools of Massachusetts because, as the chairman of the drawing committee in Boston, Mr. Charles C. Perkins, says:

At least three-quarters of the children in our public schools are destined to get their living in industries which demand a knowledge of drawing. It has a bearing upon the manufacturing interests of the community, and these can only be vivified by the cultivation of public taste. As a matter of material gain, this question of uniting art and industry is now looked upon all the world over as paramount.

A French commission appointed to examine matters pertaining to industrial success reported, in the year 1863, as follows:

Among all the branches of instruction which, in different degrees, from the highest to the lowest grade, can contribute to the technical education of either sex, *drawing, in all its forms and applications, has been unanimously regarded as the one it is most important to make common.*

I have already quoted the opinion of the French commission of 1876, that "France ought to devote herself to the study of drawing and reinvigorate her productive powers at the very sources of art."

Drawing is now generally regarded as essentially educational, taught, as it is at present, as a workthing, not as a plaything. Let it be stated that without a knowledge of drawing skilled labor in industry is impossible, and, if we remember that what this country stands most in need of to-day is skilled labor, I think that argument on behalf of drawing is unnecessary.

To make it both proficient and popular, it must be taught by the regular teachers in the public schools, in every grade of them, to all pupils. This involves the previous instruction of those teachers, and by this action the cost of introducing the subject into the scheme of instruction is reduced to a minimum. We know this to be practicable, because it has already been done in Boston and in a large number of the most important cities in the United States.

That the public is interested in the matter is also unquestioned. At the last public exhibition of the drawings made in all the public schools of Boston, by actual count at the doors, more than thirty thousand persons attended the exhibition in three days.

The regular teachers of the public schools there are now teaching drawing more systematically than it is being taught in all grades of schools in any European country, and are, moreover, producing more originality and executive power in their pupils; and I have good reason for believing that wherever the subject has been equally systematically taught the results have been equally good.

There are, of course, more ways than that of cultivating public taste and thereby elevating the industries of the country. But as this subject of drawing lies at the foundation of all technical education, and as it can be easily and efficiently taught at a very nominal expense, this seems the place to begin the introduction of a practical element into public education. Judging from the experience of other countries, as

well as the result of what has already been done in this, it seems to me that the following plan is the most economical and successful method by which technical education may be promoted in this country:

1. That industrial drawing should be taught in the public day schools as an elementary part of all general education, and that industrial drawing and modelling be taught in free evening classes to persons of both sexes who are not in attendance at day schools. To become general, this should be accomplished by an act of the legislature of each State.

2. That a State normal art school for the training of teachers and designers be established in each capital city or other convenient centre, in connection with an industrial museum and art gallery.

3. That the teachers of drawing in normal schools, evening drawing classes, or schools of art, or persons acting as supervisors of drawing in public schools, be required to possess the certificate of qualification to act as teachers awarded, upon examination, by the State normal art schools.

4. That the National Government establish or assist in the establishment of a great technical school of industrial art at Washington.

Concerning these proposals, I have only time to summarize briefly. They are not mere theories to meet an imaginary evil; similar agencies have all been successfully carried out in other countries, and have met with success in correcting great national deficiencies.

It may be objected that there are not in the country sufficient works of art to fill museums and galleries; but to this I would reply that, for a very little money, reproductions of the finest works in the British Museum, the South Kensington Museum, the Louvre, and other great national collections can be obtained, and are as good for the purposes of instruction as the originals.

Besides this, public museums and galleries are like a vacuum — they fill themselves. The empty rooms of a museum and the bare walls of a picture gallery have an attractiveness and cohesiveness about them for works of art in the possession of private persons, that are simply irresistible. The law of gravitation applied to choice works of art takes them in a straight line into public galleries, when such galleries exist. The owners of such works try, in the first place, to soothe their sense of possession by *loaning* their treasures to the public; then they make a clean breast of it, and change the loan into a donation or bequest. That is how the South Kensington Museum and the Louvre have been made the glories of the earth: by a little knowledge of human nature on the part of their projectors.

The proposal to establish normal art schools is not so formidable as it may at first sight appear. They may form a part of one central art school, which every State ought to have, but it should be recognized that we cannot get the most efficient teachers without normal training, whatever may be the manual skill of the art students who offer them-

selves as teachers. The French people found this out in 1865. When the minister for public instruction required that all applicants for teacherships of drawing in the city of Paris should be examined before appointment, 193 applicants offered themselves, and out of these only 27 passed in the artistic and 13 in the geometrical subjects. In the next year, out of 182 candidates who were examined, only 30 were passed. Had it not been for this test, all of these unfit persons might have been appointed. That was sufficient evidence of the need for a normal school, and one was established by the government the same year at Cluny.

It has been well said that teachers are not a natural product, nor has private enterprise yet undertaken to produce them; so that, if they are to be made, the State must provide them, here as elsewhere.

To establish good normal instruction is also by far the most economical way of diffusing sound education, because by it the whole people are reached in time and in the way that the best experience suggests. Through the normal school may be regulated to a nicety the public education of a State.

Concerning the proposal to establish a central school of industrial art at Washington, one department of which might be for instruction in fine art exclusively, this appears to me to be essential as an example for the whole country and in order that the treasure houses of material now existing here for such a purpose may be utilized and made fruitful. It may be necessary for the protection of this nation that the sword be kept bright at West Point, but it would conduce as much to its greatness and its glory if the ploughshare were made radiant at Washington.

I cannot close without emphasizing, with the strongest language I can command, that, as educators and political economists, we must look out for the interests of the industrial classes more than has hitherto been done.

In the conflict that is imminent between aggregated capital on the one hand and ignorant, unskilled labor on the other, lurks the greatest danger to our whole social and political organism.

It is the province of public education to mitigate, if not entirely remove, these dangers. In view, therefore, of these vast annual expenditures for public instruction, I warn you against ignoring the interests of the industrial classes in education. To the public schools all classes should be taught to look as the very bulwark of their salvation; while to the state these schools should be what embankments are to the Dutch, or what its fleet is to the English people.

A miserable three-R's education is neither the one nor the other in this half of the nineteenth century. In this great industrial battle let us give honor to whom honor is due. The present mayor of Boston recently told the boys confined in the reform school of the city that, if he could bring it about, every one of them should be taught some trade while in the school, by which to earn an honest living when he left it. As part

of this education, every boy learns industrial drawing, and the same is true of the State Reform School boys at Westboro'. This is done for economical reasons, not for show.

All honor be to the pioneer city and State that have done so much. This, and all the work done for the same reason by people who are more farseeing than mere noisy politicians, has been done under fire.

Only a few days since, a leading journal in Boston, referring to the geometrical drawing taught in the schools, ignorant of the fact that geometry is the common basis of both fine and industrial art, asked in astonishment, What is the use of this trash? Yet the most distinguished American art critic has deliberately written that over the door of every workshop in the land should be printed the old Greek inscription "*None but the skilled in geometry can enter here.*"

In conclusion, I feel that I have trespassed too much and too long on your indulgence and forbearance, and that my subject has been too much for me, whatever it may have been for you.

If, however, the devotion of a lifetime to this subject has given me the right to speak, if my transatlantic origin and education have enabled me "to see ourself as others see us," then it has not been altogether an unqualified audacity that has brought me here to-night.

This, therefore, must be my apology, that though many of my stiff necked fellow countrymen come to this country to idle away their time and then go home to find fault with its institutions, I have come here to work, and to stay, and to do my share in improving them. And here, in my own home and in the home of my children, I have only asserted the Anglo-Saxon right of free speech, which as an American citizen I feel that I shall never forfeit, because it is the common inheritance of the English speaking race.

ACTION OF THE DEPARTMENT.

On motion, the following preambles and resolution were adopted:

Whereas this convention of State and city superintendents of schools recognizes the necessity of industrial education in the public schools of America; and

Whereas, if a part of the time now given to writing in our day schools were devoted to drawing, the writing would be better and the power of drawing be a clear gain: Therefore,

Resolved, That industrial drawing—consisting of geometrical drawing, free hand drawing, and elementary design—being now regarded as the common basis of technical education, should be taught in the public day schools as an elementary part of all general education; and that industrial drawing, modelling, and applied design for trades and manufactures should be taught to persons of both sexes in free evening classes for those who are not in attendance on the day schools.

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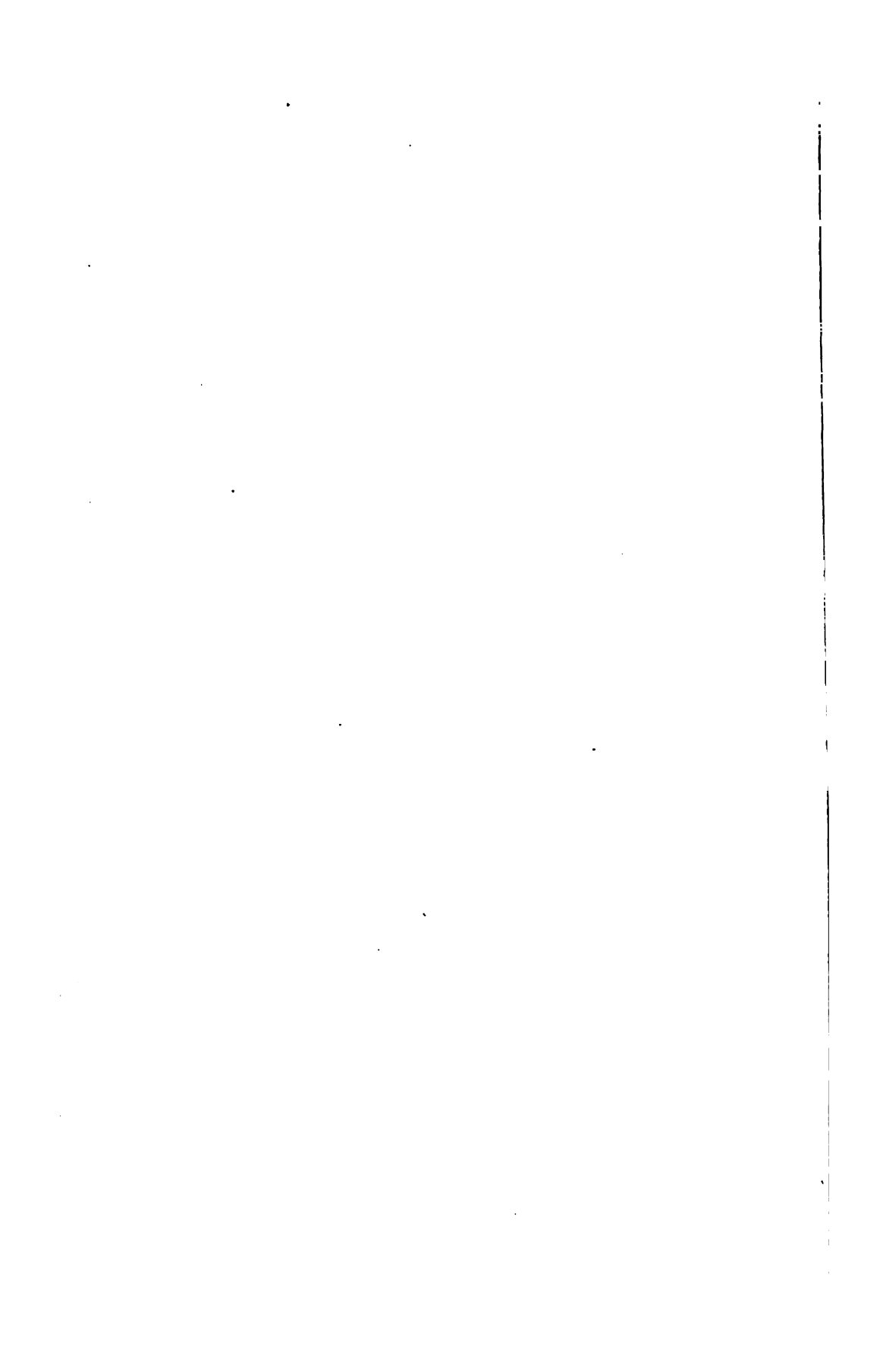
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